

## **REMARKS**

Applicant has studied the Office Action dated March 18, 2009 and have made amendments to the claims. By this amendment, claims 1-6 and 9 were amended, and claim 8 was canceled. No new matter was added. No new claims are added. After this Amendment, claims 1-7 and 9-10 remain pending.

It is submitted that the application, as amended, is in condition for allowance. Reconsideration and allowance of the pending claims in view of the following remarks is respectfully requested.

### **Specification**

Several paragraphs of the specification were amended to correct minor grammatical and typographical errors. No new matter was added.

### **Claim Rejections under 35 USC §112**

Claims 5-7, 8 and 10 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention. The Examiner stated that claims 5, 6 and 9 contain equations with variables, and that some of the variables were not defined in the claim. Claims 5 and 9 were amended to include definitions for the variables  $Y_k$ ,  $\phi$  and  $\gamma$ . Therefore, the Applicants believe that the rejection of claims 5-7, 8 and 10 has been overcome. The Examiner should withdraw the rejection of these under 35 U.S.C. §112, second paragraph.

### **Claim Rejections under 35 USC §102**

Reconsideration of the rejection of claim 1 under 35 U.S.C. 102(e) as being anticipated by Aronson et al., (U.S. Patent No. 7, 099,382), hereinafter “Aronson”, is respectfully requested in view of the amendment to claim 1 and for the following reasons.

Applicants have amended claim to more clearly and distinctly recite the presently claimed invention. Support for the amended claim language “executing more than one phase locked loop (PLL) on a predetermined sequence of observations from said block”, may be found in the original application as filed. For example, see FIG. 1. No new matter was added by the amendment.

Aronson discloses an eye opener for use in a fiber optic transmission system. There is only one mention of a “phase locked loop” in Aronson. This one mention of a “phase locked loop” appears in a single paragraph at col. 5, lines 13-55 of Aronson, to wit:

“The receiver eye opener 205b extracts a clock from the electrical signal and uses that recovered clock to regenerate degraded data within the signal. In particular, the receiver eye opener 205b provides retiming and reshaping that removes jitter (i.e., resets the jitter budget in the link). The retiming and reshaping function of the eye opener 205 may be implemented by a clock and data recovery (‘CDR’) and a retimer (‘RT’), a signal conditioner, or any device capable of opening the eye diagram. Both passive and adaptive equalization circuits may be used for these purposes. The eye opener 205 is preferably responsive to the data rate of the data stream on the particular path. According to one embodiment, the receiver eye opener 205b includes a **phase locked loop that aligns the phase of the electrical signal with a reference clock to ensure that the electrical signal is correctly clocked**, and a signal shaper that filters noise from the signal and more accurately shapes the pulse edges in the signal. The eye openers 205a,b may be implemented as ASICs, as a configurable circuit such as an FPGA, or partly in software, to name but a few possibilities. One skilled in the art will recognize that there are numerous methods for providing eye opening functionality that operate in accordance with the present invention. After the electrical signal has been properly synchronized and shaped by the receiver eye opener 205b, it is transmitted to the host 105 via a serial path 260 such as an XFI-compliant 10 Gb/s transmission line.”

This passing reference to a “phase locked loop” does not even begin to anticipate the

Applicants' invention. For example, Aronson, fails to show a phase locked loop in any of its drawings; therefore, we do not know how the phase locked loop of Aronson is designed, or how it is coupled to the eye opener of Aronson. In fact, the entire disclosure about the phase locked loop in Aronson is explained in the single sentence in which it appears, i.e., “... a ***phase locked loop*** that aligns the phase of the electrical signal with a reference clock to ensure that the electrical signal is correctly clocked ...”. There is no further discussion, in Aronson, about its phase locked loop. It is important to note that Aronson discloses, at most, only one phase locked loop. In particular, Aronson does not disclose two phase locked loops, as recited in amended claim 1.

Furthermore, Aronson does not discuss grouping signal samples into blocks, and, therefore does not disclose receiving and storing a **block** of observations  $Y_k$ , as recited in the first step of claim 1. Therefore, Aronson does not anticipate the claimed invention.

In addition, the Examiner has failed to set forth a *prima facie* case for the rejection of claim 1 by failing to specifically point out where and how Aronson anticipates each and every step of claim 1.

Therefore, in view of the foregoing remarks, Applicants believe that the rejection of claim 1 under 35 U.S.C. §102(e) has been overcome. Applicants request that the Examiner allow claim 1.

### **Claim Rejections under 35 USC §103**

Reconsideration of the rejection of claims 2 and 8 under 35 U.S.C. 103(a) as being unpatentable over Aronson in view of Kiyanagi et al., (U.S. Patent No. 5,987,078), hereinafter “Kiyanagi”, is respectfully requested in view of the amendments to the claims and for the following reasons.

Claim 8 was canceled, and therefore, the rejection regarding claim 8 is moot. Claim 2 was amended to more clearly and distinctly recite the presently claimed invention as follows:

executing a first PLL on said observations according to their chronological order of occurrence in order to generate a first intermediate value;

executing a second PLL on said observations according to their inverse chronological order of occurrence in order to generate a second intermediate value; and combining said first and second intermediate values to generate a phase estimate.

Support for the amended claim language in claim 2 may be found in the original application as filed. For example, see claim 3, which was found allowable by the Examiner, and also see FIG. 3. No new matter was added.

Claim 2 is distinguishable from any teachings of the cited references, either taken individually or in any combination. Note that neither reference teaches or suggests the claimed executing the first PLL on the observations according to chronological order of occurrence, and executing the second PLL on the same observations according to the inverse chronological order of occurrence.

Therefore, Applicants believe that the presently claimed invention, as recited for claim 2, is not taught, anticipated, or suggested, by Aronson, Kiyanagi, or any combination thereof. The rejection of claims 2 and 8 under 35 U.S.C. 103(a) should be withdrawn.

### **Conclusion**

The foregoing is submitted as full and complete response to the Office Action mailed March 18, 2009, and it is submitted that claims 1-7 and 9-10 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims 1-7 and 9-10 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless the Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

The Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR §1.56, all such information is dutifully made of record. The

foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and their attorneys.

**If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.**

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account **50-1556**.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

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